

PASTEUR—

HYDROPHOBIA;

AND

SEROTHERAPY—

DIPHTHERIA,

TETANUS,

PLAGUE,

TUBERCULOSIS,

PNEUMONIA.

BY

DR. A. LUTAUD

(Editor-in-Chief of the "Journal de Médecine de Paris"),
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London:

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MORE than fifteen years ago, Pasteur announced to the scientific world that he had discovered a cure, in fact an almost mathematical method of preventing the development of rabies in those persons who had been bitten by mad animals.

Although the mortality resulting from this disease is comparatively insignificant in comparison with that occurring from other infectious maladies, the reputed discovery of Pasteur called forth the most boundless enthusiasm; had he discovered the cure or prevention of consumption he would have received no greater praise or have been more loudly acclaimed.

Thousands of persons affected, or supposed to be affected, with rabies rushed to Paris, and, in less than one short year, more than 3,000 persons were *cured* (!) of this disease at the celebrated Pasteur Institute.

Hydrophobia, one of the rarest of known affections, had become suddenly the rage.

We have made public the results of this celebrated discovery, and we have also demonstrated that the mortality had undergone no modification, but remained the same after Pasteur's treatment as

unfortunate instances, M. Pasteur has given hydrophobia to patients who were not so afflicted.

But his scientific energy did not stop at curing this disease.

This universal genius, the inventor of Bacteriology, laid the foundations of a system, which was to be applicable to all the ills that flesh is heir to! This system, developed and amplified by his disciples, is Serotherapy.

The Pasteurians admit that for each infectious disease (and almost all diseases are infectious in our days) a specific microbe exists; this microbe secretes toxines,* and it is the invasion of the human organism by the microbe and its toxines, which determine the disease. Typhoid fever is due to the bacillus of Erberth; pneumonia to the Pneumococcus; tuberculosis to the bacillus of Koch; tetanus to the bacillus of Nicolaier; diphtheria to the bacillus of Loeffler; puerperal fever to the microbe called *Staphylococcus*. The plague, scarlet fever, measles, and all similar diseases have also their specific microbes.

First, medicines called antiseptic were sought in order to destroy the microbe; unfortunately, these medicines, if they killed the microbe, killed at the same time the person who harboured them. And so arose the original idea of applying to medicine in its entirety the principle of attenuated virus inaugurated some fifteen years ago, and to treat poison by poison.

It is, in fact, the same method; small animals are inoculated with the microbes until they become refractory; horses are then inoculated with the same microbes and they pretend to render them likewise refractory; and it is the blood of these animals, which, inoculated in men, is to preserve them from infectious diseases, or to cure them of them.

You see that the program is very seductive.

Were it really applicable, medicine would be indeed simplified, and it would be truly the golden age. Formerly, by observation, by palpitation and by auscultation, we sought for the signs and symptoms

of the disease before applying the appropriate treatment; to-day the practice of medicine is considerably simplified; a syringe suffices. You are called to see a patient, you do not lose time in making a diagnosis, a prognosis or prescribing; after a rapid examination you simply inject the anti-toxic serum; as it is at the same time preventive and curative, and as its action is never hurtful, you are sure to obtain good results. In short, the entire therapeutics consists in injecting the appropriate serum. In a few years, there will be no need of clinical instruction; there will be only laboratories, guinea-pigs, rabbits, dogs and horses which will furnish the precious anti-toxic substances. The physicians will be only a simple intermediary between the Pasteur Institute and the patients.

Such has been the dream of M. Pasteur and his disciples; we would be only too happy to see it realized. Alas, as is the case with all dreams, it unfortunately fades away "in smoke."

As long as one confines oneself to theory, as long as one inoculates the serum into guinea-pigs, rats, and dogs, surprising results seem to be obtained; but when one abandons the laboratory for the hospital, when one leaves the rabbit for the human being, the method is no longer infallible, but becomes either inoffensive or dangerous.

I purpose to pass in review the results obtained by M. Pasteur in the human race; first, I will consider *hydrophobia*; then the method so highly honoured to-day, *serotherapy*.

Hydrophobia.

This question has been so often discussed before the English public, that I shall only give a rapid *résumé* of it.

The method consists, as you know, of inoculating persons supposed to be afflicted with hydrophobia with the marrow of vaccinated animals. According to Pasteur, this marrow presents more or less activity in proportion as it is more or less dry; thus the marrow of the first day is very active; that of the fourteenth day has lost its strength, consequently, one begins with that of the

fourteenth day, the weakest, to gradually approach the marrow of the first day, the strongest.

In a few cases, when one supposes the bite very grave, one inoculates rapidly the first marrow, and this has been called the *intensive treatment*.

This intensive treatment had been introduced in 1887, on account of successive failures by the ordinary method; its author was compelled to abandon it, because it was recognized to be dangerous. In fact, it had been demonstrated, that a large number of persons, in whose cases hydrophobia had been only problematic, succumbed to laboratory hydrophobia. Among the number were, unfortunately, several English subjects.

The treatment proposed by Pasteur was essentially empiric; that is to say, rested on no scientific basis, statistics alone being able to prove its value.

Let us then examine the statistics.

Immediately after the pompous announcement of the great discovery, the number of hydrophobic patients who hastened to the Pasteur Institute was immense. In the first year there were about 3,000; this fantastic number evidently proves that all the persons were not hydrophobic, since, prior to this, rabies made each year in France about thirty victims only. As I have already said, hydrophobia had become fashionable; whoever had been licked by a dog believed himself ill and presented himself to the Institute, where he was registered, inoculated, and finally considered cured!

It was then easy to establish brilliant statistics. They said, "we have cared for 3,000 hydrophobic patients, forty have died; we have therefore cured 2,960."

At that time we criticized this method very severely, and we must recognise that now the statistics are better done. Moreover, the number of hydrophobic patients have much diminished; the average of patients treated is now about one thousand a year; but, among the thousand, how many are really affected? Only an insignificant number, because it is impossible to admit that the

discovery of a new treatment will cause the number of those in need of it to increase.

You know very well that a dog is not necessarily mad because he has bitten a man; unfortunately such is the common belief in France. When a dog bites he is immediately set upon, pursued, killed, and then declared mad. Even were the dog mad, his bite is not necessarily contagious; first, it is inoffensive when the teeth pass through the clothing; it is not always contagious when the bare skin has been bitten, because the dog is not provided with a special apparatus of inoculation as is the serpent.

Therefore, we cannot accept as hydrophobic all the persons inoculated at the Pasteur Institute. We can only take into consideration the number of patients who have died after the Pasteurian treatment; if this number be equal to that which existed before the introduction of the method, we should be authorized in concluding that this method is ineffective.

Moreover, official statistics published by the French government, from 1850 to 1885 (date of the introduction of the new treatment), give an annual average of thirty deaths, which is indeed a high figure, compared to other nations. Cases of hydrophobia are extremely rare in Germany, Turkey, and other countries.

Moreover, it is admitted by veterinary surgeons (Bouley, Tardieu, Vernois, Leblanc), that 5 per cent only of those bitten by mad animals are liable to contract the disease.

In fact rabies has always been a very rare disease in the human race.

Now let us turn to figures. We accept those furnished by the Pasteur Institute:

In 1889, eighteen persons died of hydrophobia after having undergone the treatment.

In 1890 the number was	16	} Average of fifteen a year.
„ 1891	15	
„ 1892	13	
„ 1893	17	
„ 1894	19	
„ 1895	15	
„ 1896	13	
„ 1897	13	
„ 1898	10	

It being understood that the number of persons treated was about one thousand a year, that makes a mortality of 10 per cent, which is double that of the ordinary mortality of 5 per cent. quoted above.

But one must add to the number of deaths after the Pasteur treatment those which occurred in people who had not followed the treatment; this number is about sixteen a year.

These sixteen deaths, added to the fifteen others, give an annual mortality of thirty-one, an increase on the mortality observed before the treatment.

It is well to remark that the figure is still higher, because the directors of the Pasteur Institute do not permit to figure in their statistics the very numerous cases where deaths occur in the course of the treatment, or those which take place in the fifteen days which follow the last inoculation. I therefore believe myself authorized to declare that the mortality by hydrophobia in France has increased since the new treatment. I go still further and I affirm, that in unfortunate cases, the intensive inoculations occasioned hydrophobia in persons who did not have it.

I am not the only one who entertains this opinion.

I have on previous occasions dealt with the case of a man called Rascol, a postman, who on February 28th, 1889, was attacked by a dog suspected of rabies, at the same time as another person. As Rascol had on two pairs of trousers, the dog's teeth did not penetrate to his skin; but the other man was severely bitten. Neither persons wished to go to the Pasteur Institute, but Rascol was obliged to go by the French authorities. From the 9th to the 14th of March he was under treatment. On the 26th he resumed his postal duties; on April 12th, severe symptoms set in, paraplegia, pains at the points of the inoculation (not at the bite, for he had not been really bitten); he died on April 14th, presenting all the symptoms of paralytic hydrophobia. His colleague, who had been bitten by the same dog, is still alive, and the dog also.

Similar cases are only too numerous, and you must remember

the deaths of two Englishmen, Goffi and Wilde, who died from Pasteur's treatment.

In Russia, Dr. Kessler has drawn attention to the following facts :—

“ In the village of Tachim, a supposed mad dog bites four persons, two men and two girls ; the girls were treated by the old methods ; the two men were inoculated at the Pasteur Institute in Odessa ; one of them dies.”

In Poland, Dr. Zienetz, Professor at the Imperial University, has transmitted to us the following information :—

“ In the Kingdom of Poland six persons, on an average, die annually of hydrophobia. From 1886, date of the foundation of the Pasteur Institute at Warsaw, the mortality has been twelve yearly ; where then are the advantages of the method ? ”

We can therefore conclude with Fleming, Zienetz, Peter, Virchow, and many others :

1. The Pasteurian inoculations against hydrophobia are useless.
2. They may be dangerous and have often been fatal.

Serotherapy.

Pasteur could not limit himself to a disease as rare as rabies ; this great inoculator wished to extend his system to the extreme limits of medicine ; his successors have had the heart to continue his work, and have created *serotherapy*, which has bacteriology for its foundation.

According to them, each disease is due to a specific microbe ; this seductive theory was accepted by the public, who is fond of simple explanations, and does not go to the root of things.

Unfortunately the theory is disputed by facts and the bacteriologists have been forced to modify it. Indeed, it has been demonstrated that microbes exist everywhere ; the healthiest cavities of the human body are full of them. All varieties of

microbes, the most ferocious, are found in the human mouth. We are told there are good and bad microbes as there are good and bad angels; some watch over our security; others seek our destruction.

At last the bacteriologists have proclaimed the following theory: it is not the microbe that is injurious, it is the secretion, the *excreta* of the microbe; it is the *toxine*.

The existence of toxines, once admitted, it was quite natural they should desire to provide *anti-toxines*; thus, the last attempt of the bacteriologist consists in injecting toxines into animals, in order to inoculate them with the infectious disease; from the blood of these animals (thus made artificially ill) serum, infected by the toxines, is obtained, and this morbid serum is inoculated into another subject of the same species, which in turn becomes ill; the second subject serves to inoculate a third, and so on, until the morbid properties of the serum become extinct.

In repeating the operation for each infectious disease, one obtains a serum anti-tetanic, anti-diphtheric, anti-tuberculous, and so on for every disease.

I cannot enumerate them all, the list would be too long.

They have gone even further: they have injected serum, taken from a man convalescent from an infectious disease, into a person affected with the same disease in order to cure him (pneumonia, etc.).

Before making you acquainted with the results obtained by this strange medication, I must say a few words concerning the microbes and their influence on the production of diseases.

Microbes exist in the human body, sound or ill, that is certain; but are they the cause of disease; that is at least doubtful. I shall base myself upon English medical authorities in order to combat this theory.

In your country common sense has lost none of its rights and practice always precedes theory.

In a paper read before the British Gynecological Society a few weeks ago, an eminent surgeon said that the presence of micro-organisms is the result and not the cause of disease. This surgeon is Mr. Granville Bantock, who thus expressed himself in speaking of diphtheria :

"According to the modern doctrine, diphtheria is due to a specific bacillus—Loeffler's. But I ask how does it happen that cases of true diphtheria are met with in which this bacillus cannot be found? It is a mere begging of the question to answer, 'It may be there although it cannot be found.' A still more extraordinary circumstance faces us. How does it happen that this bacillus can be found in the throat of a subject weeks, yea, even months, after all trace of the disease has disappeared? This doctrine has suffered much discredit of late from the fact that this bacillus of Loeffler's is frequently present in some exanthemata, and also in healthy persons. A still more striking example is afforded in cases of tonsillotomy, wherein upon the incised surface a greyish membrane is formed in which the bacilli abound, without constitutional disturbance or any sign of diphtheria.' I anticipate the argument that, if you allow escape of the discharge from the throat of a subject of this disease to gain access to that of a presumably healthy individual, you may, but not necessarily, produce the disease in him. And you may point to a number of cases in which medical men, in the fulfilment of what they conceived to be their duty, have sacrificed their lives in the heroic attempt to succour their patients—as, for instance, in the course of the operation of tracheotomy. But the answer to this is the very valid one that you do not convey the bacillus only. You also convey the fluid with which they are bathed, in which I contend they live, and which, in my opinion, constitutes the real cause of the disease. As the vesicle in the case of variola and vaccinia is the outward manifestation of the disease and the contained fluid its essence, so in the case of diphtheria the condition of the throat is the outward manifestation, and the fluid oozing from its surface the essential element. Many observers of eminence and authority in this field concur in denying the connection of the *Loeffler bacillus*.

with diphtheria ■ cause and effect. I ■ bound to accept as matter of fact the statements made as to the association, even in ■ majority of cases, of the *Loeffler bacillus* with diphtheria—for they are not questioned—but to reverse the proposition, and say that their presence is the result of the disease, appears to me to be the more sound reasoning.” *

It is likewise demonstrated that these terrible microbes, which the bacteriologists consider to be the cause of the tetanus, puerperal fever, tuberculosis, and so forth, ■ to be found in perfectly healthy individuals.

Dr. Whitbridge Williams has found seventy-six times in a hundred, in normal feminine secretions, the coli-bacillus of typhoid, the tetanus bacillus, the diphtheria bacillus and bacillus of puerperal fever. All these microbes were found in the same woman, who was in perfect health. Thus we recognize that the theory which claims that each disease is due to the invasion of the economy by ■ special microbe is very open to argument.

We shall see that the bacteriologists have been yet more unfortunate when they pass from theory to practice.

I shall pass in review the principal diseases in which the new method has been applied.

Diphtheria.

The greatest success in the application of serotherapy concerns the treatment of diphtheria, which was introduced with the greatest pomp.

The Pasteurians have shown much skill in addressing themselves to ■ grave affection, very justly dreaded by mothers.

* *The Modern Doctrine of Bacteriology, or the Germ Theory of Disease.* By DR. GRANVILLE BANTOCK. John Bale, Sons & Danielsson, Ltd., 88, Great Titchfield Street, W.

The question must be seriously studied, and I do not make light of the difficulties that the refutation of the bacteriological doctrines presents on this special point.

First, I must loyally recognise the following facts:

In many countries diphtheria has decreased.

In a certain number of cases serotherapy has given better results, than the methods previously employed.

We must now examine if these facts are due to the use of the anti-diphtheric serum.

All physicians have been surprised at the decrease of cases of diphtheria in the chief countries of Europe since 1890, that is long before the introduction of serotherapy.

Professor Purgez, of Buda Pest, has called attention to this point.

In Hungary the cases of diphtheria have been:

In 1892	....	49,000	■
„ 1893	....	34,000	„
„ 1894	....	22,000	„
„ 1895	....	15,000	„

From 1896 the serum is employed, and the number of cases remains 15,000 a year.

In the city of Buda Pest, where the statistics were compiled with great care, the number of cases of diphtheria had been on the decrease long before the use of serum.

In this city there were registered:

In 1892	....	2,683 cases of diphtheria.
„ 1893	....	1,912 „
„ 1894	....	1,550 „
„ 1895	....	1,324 ■

In short, in the kingdom of Hungary, during the year 1895, the mortality was only 225, and this before the application of serum.

It has not diminished since the application of the new method of treatment.

Professor Storenzen states that the mortality from diphtheria remains the same after, as it ■■■ before, the introduction of serotherapy at the hospital of Bligdam.

Professor Winters, at the Academy of New York, declares that the serum has an injurious effect, and will certainly be abandoned in the near future.

Professor Rassowitz has noticed that deaths from diphtheria have decreased in Vienna, where the use of the serum is general, but, at the same time, he remarks that they have equally decreased in lower Austria, where the serum has not been employed.

On the contrary, in some countries, the mortality has increased since the introduction of the serum treatment.

This is what has taken place at Trieste :

In 1893	there were	222	deaths from	diphtheria.
„ 1894	(beginning the	■■■■	treatment),	349 cases.
„ 1895	„	„	„	231 „
„ 1896	„	„	„	242 „

In Paris, the serum has been very generally applied, but the statistics compiled by the partisans of the new method are misleading, and for these reasons :

It is well known that children, and even adults ■■■ frequently afflicted with benign sore throats ; these sore throats are, however, greatly dreaded by mothers who always fear diphtheria ; they are not reassured until the family doctor has demonstrated the benignity of the affliction.

It is no longer so, since serotherapy has been so largely advertised.

The immense publicity given to the discovery has caused crowds of children to flock to the hospitals, and who, though not having diphtheria, ■■■ nevertheless inoculated, and inscribed among the cured.

It is in this manner, the ■■■ ■■■ with rabies, that they pretend to have diminished the mortality.

The bacteriological examination, which reveals the presence of the bacillus of Loeffler in absolutely benign cases, has caused the

number of patients admitted into the hospitals to be considerably increased.

Moreover, we have demonstrated that this microbe is not special to diphtheria, since it may be found in the throat of perfectly healthy persons.

The ~~same~~ remark has been made at the Charité of Berlin, where the number of children treated for diphtheria has trebled since the application of serum.

I believe, therefore, to have superabundantly demonstrated that :—

1st. Diphtheria had decreased in Europe long before 1895 (year of the introduction of the serum).

2nd. The decrease in the mortality is due to the fact that many children are injected, not having diphtheria, but simply ■ most benign sore throat.

But I should like to reply to the numerous physicians who have been led to recognize the happy effects of the serum, which have appeared to them superior to all former remedies.

I willingly recognize that serum is a good remedy in diphtheria, and in all diseases in which the organism is subject to immediate danger.

But, it is not to Behring, or to Roux, or to bacteriology, that we owe the employment of serum in therapeutics, but to my excellent colleague, Prof. Cheron, who, more than ten years ago, recommended its use.

Yes, the serum is ■ excellent remedy, but not the anti-toxic ~~serum~~ obtained by bacteriological process.

It is not at all necessary to torture hundreds of guinea-pigs, rabbits, and horses in order to obtain it ; it is sufficient to artificially reproduce the composition of the serum of the blood by adding chloride of sodium to distilled water.

By injecting this artificial ~~serum~~ into the organism, the blood

is washed, the poison diluted, and its elimination produced, and grave diseases ■■■ combated without exposing the patient to the risk of infection by products, the chemical composition of which ■■■ is ignorant, and which may prove dangerous.

For, if the anti-diphtheric serum is often inoffensive, its employment may be dangerous; not only it produces grave eruptions, but often terminates fatally in children who are simply suspected of having the disease.

Children, who have been injected preventively, often become very thin and emaciated, and for several years' experience bad effects. I may, therefore, affirm that the use of artificial ■■■■ in the treatment of diphtheria presents the same advantages ■■ the animal serum, and is, moreover, exempt of all danger.

I have still ■ word to say in order to show the confusion introduced into the study of the diseases of the throat since they have substituted bacteriology for clinical investigations.

In Paris, where serotherapy is almost obligatory, numerous laboratories have been created for the special analyses of secretions coming from the throat of subjects supposed to be affected with diphtheria.

Out of 850 bacteriological examinations concerning ■■■■ throat, the specific microbe of Loeffler ■■■■ found in 364 ■■■■ only; in the other cases presenting, nevertheless, the clinical symptoms of diphtheria, there were found in the throat not only the microbe of puerperal fever, but that of erysipelas, and also that of tetanus. All these cases were treated by anti-diphtheritic ■■■■

One might just as well have applied with ■■ much success any anti-toxic serum.

These facts prove sufficiently that the specificity of the numerous animal serums does not exist, and that it would be advantageous and more rational to replace them by artificial serum, the chemical composition of which is known and the innocuity absolute.

There is still another cause which has contributed to diminish the mortality of diphtheria; it is the modification introduced by the surgical treatment.

It is well known that diphtheria causes death, not only by infection but specially by the obstruction of the larynx by membranes; in such death is due to asphyxia.

Formerly this distressing symptom was relieved by opening the larynx with the knife; tracheotomy was a dangerous operation, and terminated often fatally.

To-day asphyxia is avoided by a much more simple method called *tubage*. A tube is introduced into the larynx by the natural air passage, the child can then breathe easily and thus is saved from imminent death.

I am therefore happy to state that we have saved in the last few years a great number of children, but the success is not due to bacteriology, but to the new operation invented by a most eminent American surgeon, Dr. O'Dwyer.

Tetanus.

Each year about ten persons die of tetanus in Paris. That is few if one takes into consideration the importance of the population (three millions of inhabitants) and if one reflects that the population of this great city is particularly exposed to accidents.

The Pasteurians say: It is a small number, but, the disease is always fatal, we are authorized to attempt everything to save the patient.

Moreover, we begin by denying this assertion. If tetanus is grave, it is not always fatal.

Scientific publications set forth facts which demonstrate that this affliction can be cured, either spontaneously or by treatments which have nothing to do with anti-toxines.

Professor Bacelli, of Rome, proposed ■ treatment consisting of injections of carbolic acid solutions, and in this manner he cured thirty-one patients out of thirty-two cases.

The most authorized surgeons admit that the mortality from tetanus is from twenty-five to thirty per cent. in all cases. As in other diseases, the Pasteur Institute has applied against the tetanus ■■ *anti-toxic serum*.

At first they took for granted the hypothesis that tetanus is due to a special microbe, which microbe secretes ■ special toxine; this microbe is cultivated in bouillon and inoculated into animals, the doses being gradually increased until the animal becomes vaccinated.

First guinea pigs, dogs, and sheep were inoculated; finally the horse was called upon to provide the anti-toxic serum, which was injected into human beings.

At first, the results were negative; then the Pasteurians had the audacity to propose injecting the anti-toxine into the cerebral substance.

This time the remedy was efficacious; all the patients subjected to this treatment died; was it from the treatment or from the illness itself? No one can tell exactly.

I have heard that the anti-toxines were lately injected into the brain of two Englishmen in the English Hospitals; I hope such a treatment will prove more useful in England than in France; but in my opinion, if such ■ practice becomes general, it will be necessary to add to the Society for the protection of animals, a branch for the protection of patients.

However it may be, most of the French surgeons have renounced injecting anti-toxine into the brain of their patients; the discussion which has recently taken place at the *Société de Chirurgie* has proved that no result could be obtained by such treatment. Among the surgeons who pronounced themselves on the question, I may quote the names of Reclus, Richelot, Lucas-Championnière, Nélaton, etc.

The Plague.

Pasteurians attribute the plague to a special microbe, the *cocco bacillus*.

According to M. Yersin, who has given himself up to this study, rats and flies are the propagators of this terrible epidemic.

In order to give an idea of the laboratory experiments and of the clearness of the conclusions which follow, I cannot resist the pleasure of making known to you the following experiment:

M. Yersin collected all the flies of his laboratory and crushed them in sterilized water and inoculated therewith guinea-pigs that died.

Poor little guinea-pigs? They are made to say many things! But what is the animal, large or small, which would not die after the inoculation of such a substance!

I am quite willing to admit the hypothesis that flies can transmit the plague, but it is certainly not the experiment of M. Yersin that will convince me.

I have made mention of this incident, only to show the deplorable mania bacteriologists have of trying their anti-toxines upon little animals and, from them, to draw conclusions applicable to men.

What comparison exists between man and a guinea-pig or a rabbit? But let us return to the plague.

It is scarcely necessary to tell you that M. Yersin, after having discovered the pathogenic microbe, immediately manufactured an anti-plague serum by the process of animal inoculation that I have described above.

We can but congratulate him upon his good intention, but we must, alas, recognize that his medication has not produced the hoped for results.

The anti-plague serum was first employed in 1896, in the case of two Chinamen of Hong Kong, who were cured; this fact was not

Immense quantities of anti-plague serum were then manufactured and sent to India, where the disease ■■■ making terrible ravages.

Well, I ask myself why, in the presence of a remedy ■■ certain, so many persons were left to die in India where the disease made nearly two hundred thousand victims in 1897 and 1898.

English doctors are not refractory to serotherapy; they sent Yersin's serum to Bombay, and it gave no results.

The epidemic not only produced enormous ravages in India, in spite of the serum, but it advanced by the way of Egypt and the Red Sea, and made victims as far ■■ Vienna, where several doctors and nurses died of the disease.

Nevertheless Vienna is ■■ civilized city, and anti-toxines are manufactured there as well as at the Pasteur Institute, and yet the anti-plague serum was powerless to save the lives of these unfortunates.

Even in the French colonies the anti-plague serum has proved unsuccessful and dangerous. According to ■■ letter written from Madagascar, Dr. Chevreau has inoculated the serum, by order of the Government, to prevent the spreading of the epidemic. Dr. Chevreau writes: "The serum has been perfectly useless, and in most of the ■■■■ it has produced serious accidents (nettle rash, swelling of the joints, abscesses, etc.). In some women it has produced miscarriages."

I will not dwell upon such a sad subject. I do not even wish to discourage attempts made to combat such a frightful scourge; but I desire that they should be based upon other than absurd theories.

Admitting that the plague be due to toxins formed by a microbe, it is not by injecting the ■■■■ toxins into ■■■■ that you may cure him; by inoculating the organism already infected, with a poison of like nature, you can but increase the infection.

That is ■■ simple question of common sense, and it is not necessary to be ■■ physician to solve it.

Tuberculosis.

You all know what has been said about the celebrated treatment proposed by Koch some years ago for the cure of consumption.

On the announcement of the pretended discovery by a man having the reputation of a serious investigator, the medical men of all nations rushed to Berlin, followed by an immense number of hopeful patients.

The theory was always the same, though not so complicated as we have seen since with serotherapy. Koch was not cultivating the microbes and the toxines through the inoculation of numerous horses in order to obtain an anti-toxic serum ; he was simply taking the bacillus from the secretions of patients affected with tuberculosis, and making cultures in different bouillons, in order to reduce its strength ; but this attenuated bouillon called *tuberculine* had the most disastrous effects. Let me quote Dr. Granville Bantock on the " practical " results obtained :—" This fluid of Koch's was intended to kill the bacilli, but it was soon found that in too many instances it had the very opposite effect of killing the patients—twenty-seven or twenty-eight in Berlin alone, according to Virchow, in the course of two or three months. It was shown that the injection of this fluid into a healthy subject produced little or no effect, but into a tuberculous subject it produced, in a few hours, what was called a violent 'reaction,' and that this reaction was in many cases attended with the production of a fresh crop of tubercles, especially affecting the serous and mucous membranes."

Happily for humanity the use of tuberculine was soon rejected, and the bacteriologists have been relegated to veterinary practice. They pretend that the injection of tuberculine is very useful to horses, cows, etc., in producing a useful reaction ; poor animals !

Though they are trying to introduce in the trade a new *tuberculine very much improved*, I hope the medical men will hesitate to inoculate such a dangerous drug into the veins of their patients.

Of course we discover an immense number of microbes in

people suffering from consumption, but they are the consequence of the degeneration of the cells.

The proper remedy consists, then, not in destroying the microbes, but in supporting and increasing the vital powers by judicious food and in placing the patients in better conditions of life.

Pneumonia.

Pneumonia and even influenza is attributed by the bacteriologists to a special microbe, the *pneumococcus*.

I shall not repeat what I have so many times already said: if the pneumococcus be found for the most part in pneumonia, there may also be found the staphylococcus, the gonoccus, and a quantity of other micro-organisms which are the consequence and not the cause of the disease.

Nevertheless, bacteriologists have cultivated pneumococcus in bouillon, and, from it, have extracted toxines.

But, up to the present time, they have not proposed to us a serum anti-toxic curative and preventive; that will doubtless come.

But they have done better.

Professor Wassermann, one of the most brilliant disciples of Koch, has just obtained microbial cultures, getting his anti-toxines from the Cones of patients having died of pneumonia.

He inoculates the substances into animals, and hopes, by the already described process, to obtain ■ anti-toxic serum that will be inoculated into men.

This simple statement suffices to show you how far the serumania may lead one.



Time does not permit me to discuss before you the other applications made by bacteriologists in the numerous diseases afflicting humanity. They have proposed an anti-toxic serum for puerperal fever, which is curing also measles, erysipelas, boils, abscesses, carbuncle, ulcers, and all infections. Though they have boasted of preventing every disease, they have not succeeded in rendering the practice general.

I shall finish with a few general remarks concerning bacteriology and its application to medicine.

In Paris bacteriology and serotherapy everywhere reign. The microbe is king.

Palaces are erected in his honour. While the sick die in old unhealthy hospitals, deprived of comfort and of hygiene, microbes and toxines prosper in exquisite bouillons, and in sumptuous apartments.

I notice with regret that professors, as well as students, abandon the patient for the microbe; the hospital is left for the laboratory, which is more amusing and fashionable.

Students find it more interesting to see dogs, rabbits, and guinea pigs sacrificed in fine aerated halls, than to care for the poor patients who do not always smell nice.

They prefer to cultivate microbes in clean little bottles than to study the symptoms of diseases in the sick and often dirty patients. In short, clinical studies are abandoned for the laboratory.

Why be astonished? Our young men have been taught the grand bacteriological principles!

Each disease has its microbe; each microbe has its anti-toxine.

It is a simple theory, and, like all things simple, pleases the greatest number.

Besides this, unscrupulous people have been found who have been sufficiently skilful to take advantage of the public credulity and transform bacteriology into stock companies.

For you must know there is a commercial affair behind all this.

The Pasteur Institute is a society (limited) of which the shareholders have in view to monopolize for their profit medicine and the whole of pharmacy.

In short, the anti-toxic serum constitutes a *patent medicine*.

They have obtained from the French Government the monopoly of manufacture and sale of these precious and expensive products.

I recently visited the magnificent establishment given gratuitously to the Pasteur Institute by the French State situated in the Park de Saint Cloud.

Thousands of animals are killed there each year under experimentation with the toxines, and a large income is thereby obtained.

The horses, which are gratuitously provided by the French Government, produce fat revenues for the Society.

Dr. Bonnefin has calculated that a horse, bled every ten days, furnishes each time two quarts of serum which are sold to the public for £12.

Each horse thus produces an income of about £800 a year before dying from bleeding and infection.

But the profits realized by the serum merchants are of secondary order in the matter; if I give the alarm it is that I see the public duped and the medical profession turned from its natural course.

Certainly I do not deny that microbes exist, but these microbes, which exist in a healthy as well as in a diseased body, are the consequence and not the cause of diseases.

They are not pathogenic; the inoffensive microbe becomes capable of producing disease only in the laboratory.

The specific toxines, to which the Pasteurians attribute all our diseases, are but the result of normal fermentation; the microbe produces a toxine only when placed in a medium

cultures then to be manipulated in the laboratory and inoculated into harmless animals that naturally die in consequence.

The introduction of microbes and of their specific toxins is by no means necessary to explain disease and death.

As the illustrious Claude Bernard has said, life is a permanent fermentation, the organism is constantly threatened with infection by the waste matter and the ptomaines derived from our cells and by the normal exercise of our functions; but, if the ptomaines can infect us, our organism possesses in itself active resources that destroy or eliminate the morbid germs through the natural emonctories (kidney, skin, etc.).

But I shall not abuse your patience in presenting doctrines, nor do I attempt to substitute one theory for another; my desire is simply to show you that the Pasteurian vaccinations, and the resulting serotherapy, constitute the greatest error of the age.

I conclude by declaring:—

The Pasteurian method applied to rabies has proved useless or dangerous.

The microbial and toxic cultures inoculated into animals, then into men under the name of serotherapy, constitute an error and a danger.

For diphtheria, serotherapy has been without influence in the cure of this disease; the good results obtained are due to the action of simple serum and to application of the new operation called *tubage*.

For tuberculosis the method of Koch has been disastrous and has produced no other results than to hasten death in the cases of many patients.

For tetanus, serotherapy has shown itself inferior to other methods of treatment and is very probably dangerous.

For the plague, we have seen, in spite of the serum, more than 20,000 British subjects die in India during the last year.

For puerperal fever, erysipelas, measles, and other diseases attributed to the same microbe, it has given no result whatever.

I can then only endorse the assertions of Peter, of Zienetz, of Virchow, of Purgez, of Boucher, of Durr, and many others who recognise in the Pasteurian vaccinations not only an error, but also a danger.

• It is not necessary to be a physician to understand that it is highly dangerous to inject a toxine into an organism already infected by a toxine of like nature, it is therefore useless to torture thousands of animals in order to obtain a toxic serum, the action of which is uncertain, while pharmacology provides for us an artificial serum, the true composition and the action of which we know perfectly well.

I thank the English public, who have always supported me during the struggle, which, for fifteen years, I have carried on against intolerance and error.

I remark with satisfaction that England is the only nation that has refused to permit the erection on its territory of an anti-rabic Institute.

I hope that the practical common sense, of which the inhabitants of this great country have always given proof, will for a long time yet preserve it from the dangers of bacteriology.